

# NorthWestern Energy

## *2006 Residential Time of Use Pilot Project*

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*MPSC Smart Metering Workshop  
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# *Residential Time Of Use Pilot Project*

## Objectives

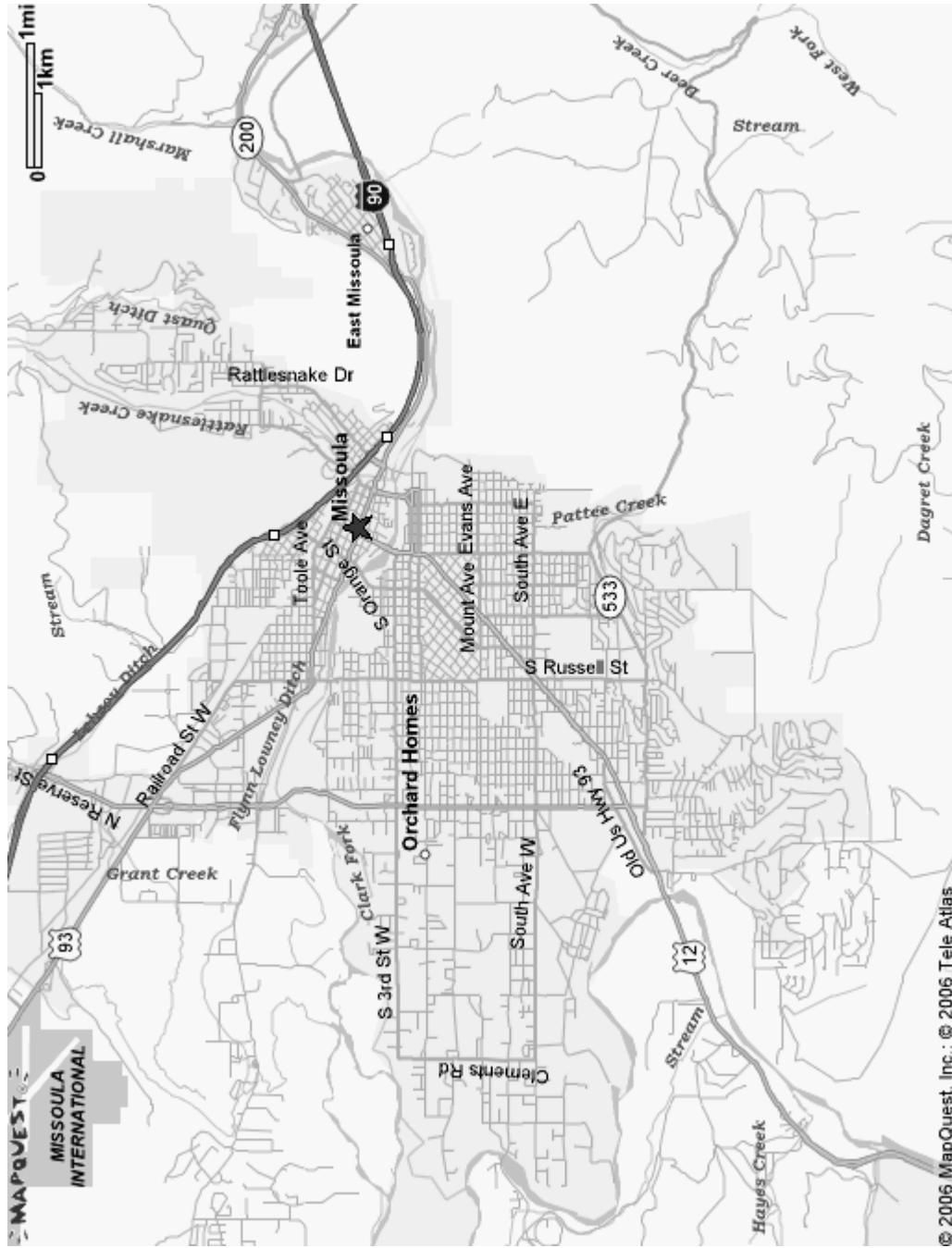
- Research the following items in the residential electric market:
  - Customer willingness to adopt time-of-use rate structure
  - Level of energy consumption change caused by TOU rates
  - Effectiveness of metering technology and communications systems needed to gather and process interval electric consumption data
  - Integration with NWE billing system
  - Costs and benefits
  - Potential for expanded offering of TOU rates

# *Residential TOU Pilot Project*

## Plan

- 500 residential electric customer participants
- One city, selected residential sections ... to minimize fixed network cost
- Solicit participant interest through surveys, follow-up phone calls and personal visits to describe program
  - Survey up to 5,000 customers to determine interest
    - Try for similarity and uniformity among housing units
- Recruit participants for TOU rates, and non-participants for statistical control

# Missoula Test Location



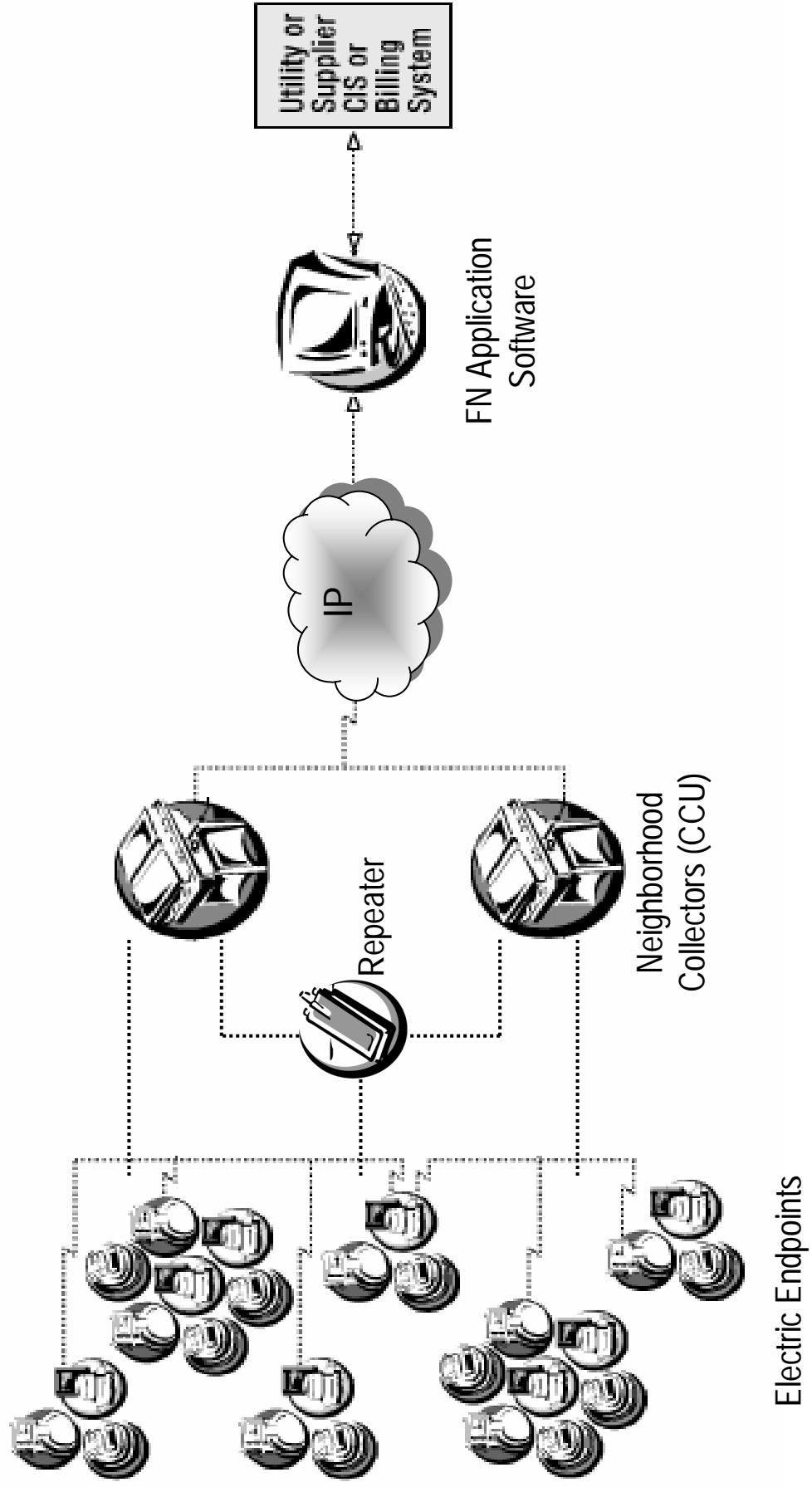
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# *Residential TOU Pilot Project*

## Plan (continued)

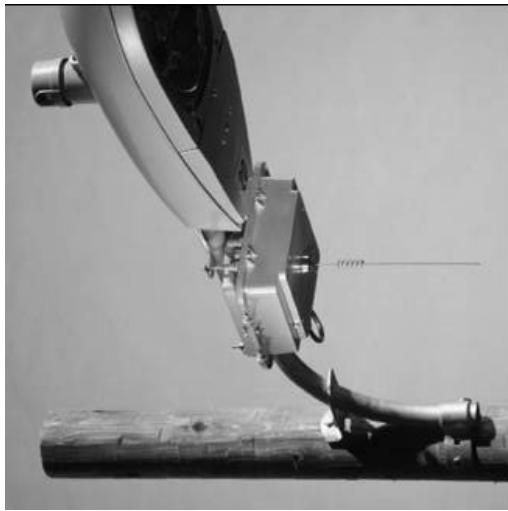
- Use of existing AMR system through addition of localized fixed wireless network
  - More costly interval recording meters not necessary
  - CENTRON meters will be used
    - Emits signal (reads) every 30 seconds
    - Planned as part of regular NWE meter stock rotation
- Neighborhood Radio Transceivers (Cell Control Unit or CCU)
  - 1.5 mile coverage radius
  - 3-4 units to cover approx. 2,000 meter points (depending on density of TOU participants)
  - Programmed to “listen” at desired intervals (15 minutes)
  - Wireless and landline data backhaul to host server

# *Fixed Network*



# *Repeate*s**

Pole Top Repeater



Decorative Light  
Repeater



Meter Sleeve  
Repeater



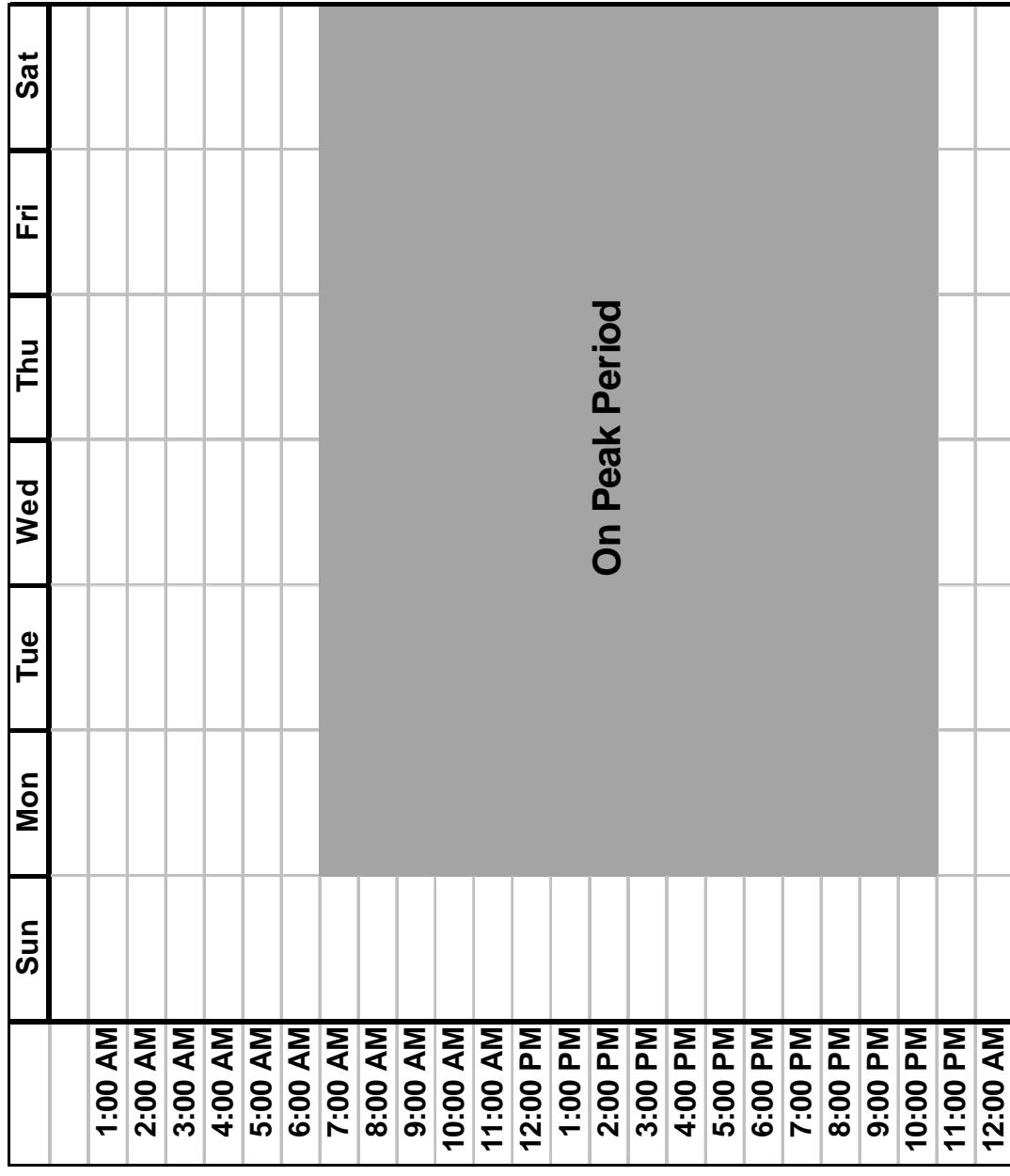
# **Neighborhood Cell Control Unit (CCU)**



## **Software Requirements**

- **Fixed network operation (Repeaters, CCU's & transport)**
- **Interval data capture; data storage & maintenance**
  - Current Residential rates ..... 12 meter reads/year
  - TOU rates ..... 35,040 meter reads/year
- **Production of data files (billing determinants) for NWE billing system**
- **Calculation of electricity usage charges per TOU rate design**
- **Production of monthly energy use profiles (graphs) for customers**
- **Data analysis & reporting**

# On Peak / Off Peak Periods



“Example” Electricity  
Supply Prices:

July 2005

On Peak \$ 0.056/kWh

Off Peak \$ 0.037/kWh

January 2006

On Peak \$ 0.057/kWh

Off Peak \$ 0.045/kWh

## *Preliminary Budget Estimate (one year)*

• <b>Hosting Services</b>	\$ 35,000
• <b>Pilot Program Professional Services</b>	93,000
• <b>Fixed Network (install, operate &amp; maintain)</b>	195,000
• <b>Miscellaneous &amp; unforeseen</b>	<u>10,000</u>
	<b>\$ 333,000</b>

## **Work Items**

- Perform rate design work; identify time-of use blocks and pricing
  - Two-tier (On Peak & Off Peak)
  - Three-tier (Peak, Off Peak, Shoulder)
  - Critical peak pricing not likely to be included ... requires advance notification capability
- NWE billing system interface
  - Determine file formats used for export from vendor system to NWE billing system
  - Determine need for and use of “shadow” billing system

## **Work Items**

- **Complete scope of work statement; final vendor negotiations; execute services agreement with vendor in early Q2 2006**
- **Begin project 2Q 2006. Project duration is at least one year, possibly two years**

## *More Information*

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# Questions